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| 10/500,629 | 02/16/2005 | Jorg Fahl | 1085-033 | 5179 |
| 47888 7590 01/09/2007 HEDMAN & COSTIGAN P.C. 1185 AVENUE OF THE AMERICAS NEW YORK, NY 10036 | | | EXAMINER WEBB, GREGORY E | |
| | | | ART UNIT 1751 | PAPER NUMBER |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
| 3 MONTHS | | 01/09/2007 | PAPER | |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/500,629

Applicant(s)

FAHL ET AL.

Examiner

Gregory E. Webb

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

[Signature]
1/17/07

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DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Corr, Stuart (US20020007640).

Concerning the carbon dioxide and the refrigerant, Corr, Stuart teaches the following:

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[0022] The **refrigerant** which is charged to the system after the flushing process is suitably a hydrofluorocarbon (HCFC) **refrigerant**, a hydrofluorocarbon (HFC) **refrigerant**, or a blend of **refrigerants** containing at least one HFC, HCFC or both. Suitably the **refrigerant** does not contain chlorine atoms, thus the **refrigerant** is preferably consists essentially of only HFC **refrigerant**. HCFC's and HFC's contain at least one atom of carbon, hydrogen and fluorine and, in the case of HCFC's, one or more chlorine atoms. Other known **refrigerant** gasses including **carbon dioxide**, hydrocarbons, for example pentane and isobutane, and ammonia may also be employed as the **refrigerant** gas. (*emphasis added*)

Concerning the polyalkylene glycol and the neopentyl polyol ester, Corr, Stuart teaches the following:

[0020] The old refrigerant and lubricant may typically comprise a chlorofluorocarbon refrigerant and a mineral oil lubricant although the method of removing deposits is also applicable to refrigeration systems in which the old refrigerant was a hydrofluorocarbon and/or a hydrochlorofluorocarbon refrigerant and the old lubricant was a synthetic material, for example a **polyalkylene glycol** lubricant, an alkyl benzene, a polyvinyl ether and a polyol ester, especially **neopentyl polyol ester** lubricant. (*emphasis added*)

Concerning the phosphate ester and the triphenyl phosphate, Corr, Stuart teaches the following:

[0091] Examples of suitable anti-wear and extreme pressure resistance agents include sulphurised fatty acids and fatty acid esters, such as sulphurised octyl tallate; sulphurised terpenes; sulphurised olefin; organopolysulphides; organo phosphorous derivatives including amine phosphates, alkyl acid phosphates, dialkyl phosphates, aminedithiophosphates, trialkyl and triaryl phosphorothionates, trialkyl and triaryl phosphines, and dialkylphosphites, e.g. amine salts of phosphoric acid and monoethyl ester, amine salts of dinonylnaphthalene sulphonate, **triphenyl phosphate**, trinaphthyl phosphate, diphenyl cresyl and dicresyl phenyl phosphates, **tricresyl phosphate**, naphthyl diphenyl phosphate, triphenylphosphorothionate; dithiocarbamates, such as an antimony dialkyl dithiocarbamate; chlorinated and/or fluorinated hydrocarbons and xanthates. (*emphasis added*)

Concerning the diphenyl amine, Corr, Stuart teaches the following:

[0088] Suitable oxidation resistance and thermal stability improvers may be selected from the diphenyl-, dinaphthyl-, and phenylnaphthyl-amines, the phenyl and naphthyl groups of which may be substituted. Specific examples include N,N'-diphenyl phenylenediamine, p-octyldiphenylamine, p,p-dioctyldiphenylamine, N-phenyl-1-naphthyl

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amine, N-phenyl-2-naphthyl amine, N-(p-dodecyl)-phenyl-2-naphthyl amine, di-1-naphthyl amine, and di-2-naphthyl amine. Other suitable oxidation resistance and thermal stability improvers may be selected from the phenothiazines such as N-alkylphenothiazines, and the hindered phenols such as 6-(t-butyl) phenol, 2,6-di-(t-butyl) phenol, 4-methyl-2,6-di-(t-butyl) phenol and 4,4'-methylenebis(-2,6-di-[t-butyl] phenol). (*emphasis added*)

Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Hagihara (US6096692).

Concerning the carbon dioxide, Hagihara teaches the following:

Ester compounds and carbonate compounds show good compatibility with hydrofluorocarbons and high thermal stability in the presence of hydrofluorocarbons. Also, these compounds have markedly better insulating properties and much lower hygroscopicity than polyalkylene glycol compounds. However, compared with the conventional CFC12-mineral oil working fluid system, both freon and oil tend to have a high polarity in the hydrofluorocarbon-ester oil system or hydrofluorocarbon-carbonate oil system, and the systems become highly hygroscopic. Therefore, esters tend to be hydrolyzed to form carboxylic acids, and the formed carboxylic acids may in turn erode metals and cause to wear down the metals. Also, in the case of using a carbonate oil, there arises a problem that a non-condensable **carbon dioxide** gas is generated owing to hydrolysis of the carbonate oil to cause low refrigerating capacity. (*emphasis added; noting that the formation of carbon dioxide would meet the broad requirement for carbon dioxide in claim 1*)

Concerning the refrigerant, Hagihara teaches the following:

When the cyclic ketals or cyclic acetals in the first invention are used as a base oil for a working fluid composition for a **refrigerating** machine, the mixing ratio of hydrofluorocarbons with a **refrigeration** oil containing the cyclic ketals or cyclic acetals used in the present invention, i.e. hydrofluorocarbons/**refrigeration** oil, is normally 50/1 to 1/20 (weight ratio), preferably 10/1 to 1/5 (weight ratio). When the mixing ratio exceeds 50/1, the viscosity of the mixed solution of hydrofluorocarbons and a **refrigeration** oil becomes low, thereby making it likely to have undesirably poor lubricity. When the mixing ratio of hydrofluorocarbons/**refrigeration** oil is lower than 1/20, the **refrigeration** capability is liable to become undesirably poor. (*emphasis added*)

Concerning the polyalkylene glycol, Hagihara teaches the following:

Since **polyalkylene glycol** compounds have a higher polarity than naphthene mineral oils, their compatibility with HFC134a at low temperatures is certainly good. However, **polyalkylene glycol** compounds have a problem to cause phase separation as the temperature increases, as mentioned in U.S. Pat. No. 4,755,316. There are also several other problems about **polyalkylene glycol** compounds. A poor insulating property is one of the problems. Due to this significant problem, **polyalkylene glycol** compounds cannot be used for refrigerating devices of electric refrigerators and air conditioners where a motor is incorporated in a compressor. Therefore, applications of **polyalkylene glycol** compounds are proposed for car air conditioners where their poor insulating property does not cause any problems. High hygroscopicity is another significant problem of **polyalkylene glycol** compounds. Water absorbed by the compounds causes thermal instability in the presence of HFC134a and hydrolysis of organic materials such as PET films. Insulating property can be improved and hygroscopicity is decreased by reducing the number of ether bonds per unit weight of **polyalkylene glycol** compounds, but the compatibility with hydrofluorocarbons becomes poor. Thus, ether compounds like **polyalkylene glycol** compounds cannot have both good compatibility with hydrofluorocarbons and good insulating property/decreased hygroscopicity at the same time. (*emphasis added*)

Concerning the neopentyl polyol ester, Hagihara teaches the following:

The mixing ratio between the cyclic ketals or cyclic acetals in the first invention and other lubricating oils is such that the cyclic ketals or cyclic acetals are contained in the blended lubricating oil in an amount of not less than 0.1% by weight, preferably not less than 1.0% by weight, more preferably not less than 5.0% by weight, still more preferably not less than 10% by weight. When the ratio is less than 0.1% by weight, lubricity improving effect and preventive effect against hydrolysis of esters and carbonates are not sufficiently exerted. When the cyclic ketals or cyclic acetals in the first invention are used as a base oil for a working fluid composition for a refrigerating machine, the other lubricating oils to be added preferably have good compatibility with hydrofluorocarbons, preferable examples of which include **neopentyl polyol esters**, polyalkylene glycols, and carbonates. However, when the cyclic ketals or cyclic acetals in the first invention have sufficiently good compatibility with hydrofluorocarbons, for example, when they have a two-phase separation temperature of not more than -30.degree. C., preferably not more than -50.degree. C., lubricating oils which are less compatible with hydrofluorocarbons, such as alkylbenzenes and mineral oils, may be blended as long as two-phase separation temperature is below 10.degree. C. (*emphasis added*)

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Concerning the phosphate ester and the triphenyl phosphate, Hagihara teaches the following:

Triaryl phosphates and triaryl phosphites used in the first invention are those having 18-70 carbon atoms, preferably 18-50 carbon atoms. Specifically, examples include triaryl phosphates such as **triphenyl phosphate, tricresyl phosphate, trixylenyl phosphate, cresyldiphenyl phosphate, xylenyldiphenyl phosphate**, tris(tribromophenyl) phosphate, tris(dibromophenyl) phosphate, tris(2,4-di-tert-butylphenyl) phosphate and trinonylphenyl phosphate; and triaryl phosphites such as triphenyl phosphite, tricresyl phosphite, trixylenyl phosphite, cresyldiphenyl phosphite, xylenyldiphenyl phosphite, tris(2,4-di-tert-butylphenyl) phosphite, trinonylphenyl phosphite, tris(tribromophenyl) phosphite and tris(dibromophenyl)phosphite, with preference given to **triphenyl phosphate, tricresyl phosphate, trixylenyl phosphate**, tris(2,4-di-tert-butylphenyl) phosphate, triphenyl phosphite, tricresyl phosphite, trixylenyl phosphite, and tris(2,4-di-tert-butylphenyl) phosphite. The amount of triaryl phosphates and/or triaryl phosphites added is normally 0.1 to 5.0% by weight, preferably 0.5 to 2.0% by weight of the lubricating oil comprising the cyclic ketals and cyclic acetals in the first invention. (*emphasis added*)

Concerning the diphenyl amine, Hagihara teaches the following:

To the cyclic ketals or cyclic acetals in the first invention, conventional lubricating oil additives, such as antioxidants, extreme pressure additives, oiliness improvers, defoaming agents, detergent dispersants, viscosity index improver, anticorrosive agents, and antiemulsifiers may be added according to necessity. Examples of antioxidants used in the present invention include phenol antioxidants, such as 2,6-di-t-butylphenol, 2,6-di-t-butyl-4-methylphenol, and 4,4'-methylenebis(2,6-di-t-butylphenol); amine-based antioxidants, such as p,p-dioctylphenylamine, monooctyldiphenylamine, phenothiazine, 3,7-dioctylphenothiazine, phenyl-1-naphthylamine, phenyl-2-naphthylamine, alkylphenyl-1-naphthylamine, and alkylphenyl-2-naphthylamine; sulfur-based antioxidants, such as alkyl disulfides, thiodipropionic acid esters, and benzothiazoles; and zinc dialkyl dithiophosphate and zinc diaryl dithiophosphate. The amounts of the above additives are 0.05 to 2.0% by weight of the lubricating oil comprising the cyclic ketals and cyclic acetals in the first invention. (*emphasis added*)

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3. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Osumi (US6692654).

Concerning the carbon dioxide, Osumi teaches the following:

The blending ratio of **carbon dioxide** to hydrofluorocarbon and/or hydrocarbon refrigerants is not particularly restricted. The total amount of hydrofluorocarbon and/or hydrocarbon may be within the range of preferably 1 to 200 parts by weight, more preferably 10 to 100 parts by weight per 100 parts by weight of **carbon dioxide**. (*emphasis added*)

Concerning the refrigerant and the air conditioning, Osumi teaches the following:

The **refrigerating** machine oil according to the present invention can be used as a lubricating oil for the **refrigerant** compressors of any types of **refrigerating** machine. Refrigerating machines to which the inventive **refrigerating** machine oil is applicable are room air conditioners, packaged **air conditioning** systems, refrigerators, automobile air conditioners, dehumidifiers, freezers, **refrigerating** chambers, vending machines, show-cases and cooling systems for chemical plants. Furthermore, the inventive **refrigerating** machine oil is preferably used in **refrigerating** machines having sealed compressors. The inventive **refrigerating** machine oil is also eligible for use in a reciprocating, rotary, or centrifugal type compressor. (*emphasis added*)

Concerning the polyalkylene glycol, Osumi teaches the following:

Since a refrigerating machine oil is also required to perform a role of an insulating oil, when used in a hermetic type compressor, a refrigerating machine oil containing **polyalkylene glycol** which is poor in electric insulation is not appropriate for such hermetic type compressors. Therefore, it is hastened to develop a refrigerating machine oil which meets all of the requirements such as lubricity, miscibility with a refrigerant, stability and electric insulation, in a well-balanced manner. (*emphasis added*)

Concerning the phosphate ester and the triphenyl phosphate, Osumi teaches the following:

Specific examples of the phosphoric esters are tributyl phosphate, tripentyl phosphate, trihexyl phosphate, triheptyl phosphate, trioctyl phosphate, trinonyl phosphate, tridecyl phosphate, triundecyl phosphate, tridodecyl phosphate, tritridecyl phosphate, tritetradecyl phosphate, tripentadecyl phosphate, trihexadecyl phosphate, triheptadecyl phosphite, trioctadecyl phosphate, trioleyl phosphate, **triphenyl phosphate**, **tricresyl**

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phosphate, trixylyl phosphate, cresyldiphenyl phosphate and xylyldiphenyl phosphate. (*emphasis added*)

4. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Corr (US6849583).

Concerning the carbon dioxide and the refrigerant, Corr teaches the following:

The **refrigerant** is suitably a hydrofluorocarbon (HCFC) **refrigerant**, a hydrofluorocarbon (HFC) **refrigerant**, or a blend of **refrigerants** containing at least one HFC, HCFC or both. The invention however has applicability in **refrigeration** systems containing other **refrigerants** including **carbon dioxide** and ammonia optionally in combination with one or more other **refrigerant**. Suitably the **refrigerant** does not contain chlorine atoms, thus the **refrigerant** is preferably consists essentially of only HFC **refrigerant**. HCFC's and HFC's contain at least one atom of carbon and fluorine and, in the case of HCFC's only, one or more chlorine atoms. (*emphasis added*)

Concerning the polyalkylene glycol, Corr teaches the following:

11. A refrigeration lubricant composition consisting essentially of a synthetic lubricant consisting of a polyol ester and/or a **polyalkylene glycol** and an amphiphilic anti-deposition component which is an alkyl alkoxylate derived from an alkylene oxide and a moiety derived from a compound having an active hydrogen atom and an oleophilic moiety, an ester of a **polyalkylene glycol** or a fluorinated polyether. (*emphasis added*)

Concerning the neopentyl polyol ester, Corr teaches the following:

Synthetic lubricants preferred for use in the working fluid compositions of the invention are those selected from the class known as the polyol esters and especially **neopentyl polyol esters** which have, inter alia, a relatively high level of thermal stability. Suitable **neopentyl polyol esters** include the esters of pentaerythritol, polypentaerythritols such as di- and tripentaerythritol, trimethylol alkanes such as trimethylol propane, and neopentyl glycol. Such esters may be formed with linear and or branched aliphatic carboxylic acids, such as linear and/or branched alkanoic acids, or esterifiable derivatives thereof, for example anhydrides. A minor proportion of an aliphatic polycarboxylic acid, for example an aliphatic dicarboxylic acid, or an esterifiable derivative thereof may be also used in the synthesis of the ester lubricant in order to increase the viscosity thereof. However, where such an aliphatic polycarboxylic acid (or

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esterifiable derivative thereof is employed in the synthesis, it will preferably constitute no more than 50 mole %, more preferably no more than 30 mole %, especially no more than 10 mole % of the total amount of carboxylic acid used in the synthesis. For convenience, the term "carboxylic acid" when employed herein is to be taken to include "esterifiable derivatives" of that acid unless the context clearly precludes this meaning. Usually, the amount of the carboxylic acid(s) used in the synthesis will be sufficient to esterify all of the hydroxyl groups contained in the polyol, but in certain circumstances residual hydroxyl functionality may be acceptable. (*emphasis added*)

Concerning the phosphate ester and the triphenyl phosphate, Corr teaches the following:

Examples of suitable anti-wear and extreme pressure resistance agents include sulphurised fatty acids and fatty acid esters, such as sulphurised octyl tallate; sulphurised terpenes; sulphurised olefin; organopolysulphides; organo phosphorous derivatives including amine phosphates, alkyl acid phosphates, dialkyl phosphates, aminedithiophosphates, trialkyl and triaryl phosphorothionates, trialkyl and triaryl phosphines, and dialkylphosphites, e.g. amine salts of phosphoric acid and monohexyl ester, amine salts of dinonylnaphthalene sulphonate, **triphenyl phosphate**, triphenyl phosphate, diphenyl cresyl and dicresyl phenyl phosphates, **tricresyl phosphate**, naphthyl diphenyl phosphate, triphenylphosphorothionate; dithiocarbonates, such as an antimony dialkyl dithiocarbamate; chlorinated and/or fluorinated hydrocarbons and xanthates. (*emphasis added*)

Concerning the diphenyl amine, Corr teaches the following:

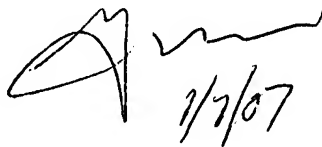
Suitable oxidation resistance and thermal stability improvers may be selected from the diphenyl-, dinaphthyl-, and phenylnaphthyl-amines, the phenyl and naphthyl groups of which may be substituted. Specific examples include N,N'-diphenyl phenylenediamine, p-octyldiphenylamine, p,p-dioctyldiphenylamine, N-phenyl-1-naphthyl amine, N-phenyl-2-naphthyl amine, N-(p-dodecyl)-phenyl-2-naphthyl amine, di-1-naphthyl amine, and di-2-naphthyl amine. Other suitable oxidation resistance and thermal stability improvers may be selected from the phenothiazines such as N-alkylphenothiazines, and the hindered phenols such as 6-(t-butyl) phenol, 2,6-di-(t-butyl) phenol, 4-methyl-2,6-di-(t-butyl) phenol and 4,4'-methylenebis(-2,6-di-[t-butyl]phenol). (*emphasis added*)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory E. Webb whose telephone number is 571-272-1325. The examiner can normally be reached on 9:00-17:30 (m-f).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Douglass McGinty can be reached on (571)272-1029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Gregory E. Webb
Primary Examiner
Art Unit 1751

gew